

In the Claims:

Please amend Claims 24, 29-31, 33, 35, 37-39 and 41, cancel Claims 36 and 40, and add new Claims 42-70, such that the claims are as set forth below.

1-23. (Cancelled)

24. (Amended) A composition for chemical mechanical planarization of a surface having at least one feature thereon comprising copper, comprising:

hydroxylamine in an amount sufficient for chemical etching of the at least one feature comprising copper; ~~and~~

a material selected from a the group consisting of hydroxylamine nitrate, hydroxylamine sulfate, an ammonium salt, and any combination thereof, the ammonium salt selected from a the group consisting of a nitrate salt, a sulfate salt, a phosphate salt, a chloride salt, and any combination thereof; and

an abrasive;

wherein a pH of the composition is in a range of from approximately 2.0 to approximately 5.0.

25. (Previously Presented) The composition of claim 24, wherein the amount of hydroxylamine is from approximately 0.3 to approximately 10 percent by weight.

26. (Previously Presented) The composition of claim 24, wherein the material comprises hydroxylamine nitrate in an amount of from approximately 0.1 to approximately 3 percent by weight.

27. (Previously Presented) The composition of claim 24, wherein the material comprises hydroxylamine sulfate in an amount of from approximately 0.001 to approximately 12 percent by weight.

28. (Previously Presented) The composition of claim 24, wherein the amount of hydroxylamine is from approximately 0.3 to approximately 10 percent by weight, and the

material comprises hydroxylamine nitrate in an amount of from approximately 0.1 to approximately 3 percent by weight and hydroxylamine sulfate in an amount of from approximately 0.001 to approximately 12 percent by weight.

29. (Amended) The composition of claim 24, wherein the material comprises an ammonium salt selected from a the group consisting of a nitrate salt, a sulfate salt, a phosphate salt, a chloride salt, and any combination thereof.

30. (Amended) The composition of claim 24, further comprising a material selected from a the group consisting of a free radical inhibitor, an insoluble complexing agent, a soluble complexing agent, and any combination thereof.

31. (Amended) The composition of claim 30, wherein the free radical inhibitor is selected from a the group consisting of hydrazine, hydrazine derivatives, hydrazine salts, hydrazid, hydrazid derivatives, and any combination thereof, in an amount sufficient to inhibit the formation of free radicals in the composition.

32. (Previously Presented) The composition of claim 30, wherein the free radical inhibitor comprises 4-hydrazine benzoic acid.

33. (Amended) The composition of claim 30, wherein the insoluble complexing agent is selected from a the group consisting of benzotriazole, 1,6-dioxaspirol [4,4] nonane 2,7-dione, dioximes, and any combination thereof.

34. (Previously Presented) The composition of claim 30, wherein the insoluble complexing agent comprises 2,4-pentanedione dioxime.

35. (Amended) The composition of claim 30, wherein the soluble complexing agent is selected from a the group consisting of citric acid, copper-complexing catechol derivatives, copper-complexing alpha organic acids, copper-complexing hydroxamic acids, copper-complexing amino acids, copper-complexing dicarboxylic acids, and any combination

thereof.

36. (Cancelled)

37. (Amended) The composition of claim 36 24, wherein the abrasive is selected from a the group consisting of silica, alumina, ceria, titania, zirconia, and any combination thereof.

38. (Amended) The composition of claim 36 24, wherein the abrasive comprises colloidal silica.

39. (Amended) The composition of claim 36 24, wherein the abrasive comprises milled alumina.

40. (Cancelled)

41. (Amended) A composition for chemical mechanical planarization comprising hydroxylamine in an amount sufficient for chemical etching; a material selected from a the group consisting of hydroxylamine nitrate, hydroxylamine sulfate, an ammonium salt, and any combination thereof, the ammonium salt selected from a the group consisting of a nitrate salt, a sulfate salt, a phosphate salt, a chloride salt, and any combination thereof; and 4-hydrazine benzoic acid.

42. (New) The composition of claim 41, wherein the amount of hydroxylamine is from approximately 0.3 to approximately 10 percent by weight.

43. (New) The composition of claim 41, wherein the material comprises hydroxylamine nitrate in an amount of from approximately 0.1 to approximately 3 percent by weight.

44. (New) The composition of claim 41, wherein the material comprises

hydroxylamine sulfate in an amount of from approximately 0.001 to approximately 12 percent by weight.

45. (New) The composition of claim 41, wherein the amount of hydroxylamine is from approximately 0.3 to approximately 10 percent by weight, and the material comprises hydroxylamine nitrate in an amount of from approximately 0.1 to approximately 3 percent by weight and hydroxylamine sulfate in an amount of from approximately 0.001 to approximately 12 percent by weight.

46. (New) The composition of claim 41, wherein the material comprises an ammonium salt selected from the group consisting of a nitrate salt, a sulfate salt, a phosphate salt, a chloride salt, and any combination thereof.

47. (New) The composition of claim 41, further comprising a material selected from the group consisting of a free radical inhibitor, an insoluble complexing agent, a soluble complexing agent, and any combination thereof.

48. (New) The composition of claim 47, wherein the free radical inhibitor is selected from the group consisting of hydrazine, hydrazine derivatives other than 4-hydrazine benzoic acid, hydrazine salts, hydrazid, hydrazid derivatives, and any combination thereof, in an amount sufficient to inhibit the formation of free radicals in the composition.

49. (New) The composition of claim 47, wherein the insoluble complexing agent is selected from the group consisting of benzotriazole, 1,6-dioxaspirol [4,4] nonane 2,7-dione, dioximes, and any combination thereof.

50. (New) The composition of claim 47, wherein the insoluble complexing agent comprises 2,4-pentanedione dioxime.

51. (New) The composition of claim 47, wherein the soluble complexing agent is selected from the group consisting of citric acid, copper-complexing catechol derivatives,

copper-complexing alpha organic acids, copper-complexing hydroxamic acids, copper-complexing amino acids, copper-complexing dicarboxylic acids, and any combination thereof.

52. (New) The composition of claim 41, further comprising an abrasive.

53. (New) The composition of claim 41, wherein the abrasive is selected from the group consisting of silica, alumina, ceria, titania, zirconia, and any combination thereof.

54. (New) The composition of claim 41, wherein the abrasive comprises colloidal silica.

55. (New) The composition of claim 41, wherein the abrasive comprises milled alumina.

56. (New) The composition of any one of claims 41-46, wherein a pH of the composition is in a range of from approximately 2.0 to approximately 5.0.

57. (New) A composition for chemical mechanical planarization of a surface having at least one feature thereon comprising copper, comprising:

hydroxylamine in an amount sufficient for chemical etching of the at least one feature comprising copper;

a material selected from the group consisting of hydroxylamine nitrate, hydroxylamine sulfate, an ammonium salt, and any combination thereof, the ammonium salt selected from the group consisting of a nitrate salt, a sulfate salt, a phosphate salt, a chloride salt, and any combination thereof; and

an abrasive comprising alumina.

58. (New) The composition of claim 57, wherein the amount of hydroxylamine is from approximately 0.3 to approximately 10 percent by weight.

59. (New) The composition of claim 57, wherein the material comprises hydroxylamine nitrate in an amount of from approximately 0.1 to approximately 3 percent by weight.

60. (New) The composition of claim 57, wherein the material comprises hydroxylamine sulfate in an amount of from approximately 0.001 to approximately 12 percent by weight.

61. (New) The composition of claim 57, wherein the amount of hydroxylamine is from approximately 0.3 to approximately 10 percent by weight, and the material comprises hydroxylamine nitrate in an amount of from approximately 0.1 to approximately 3 percent by weight and hydroxylamine sulfate in an amount of from approximately 0.001 to approximately 12 percent by weight.

62. (New) The composition of claim 57, wherein the material comprises an ammonium salt selected from the group consisting of a nitrate salt, a sulfate salt, a phosphate salt, a chloride salt, and any combination thereof.

63. (New) The composition of claim 57, further comprising a material selected from the group consisting of a free radical inhibitor, an insoluble complexing agent, a soluble complexing agent, and any combination thereof.

64. (New) The composition of claim 63, wherein the free radical inhibitor is selected from the group consisting of hydrazine, hydrazine derivatives, hydrazine salts, hydrazid, hydrazid derivatives, and any combination thereof, in an amount sufficient to inhibit the formation of free radicals in the composition.

65. (New) The composition of claim 63, wherein the free radical inhibitor comprises 4-hydrazine benzoic acid.

66. (New) The composition of claim 63, wherein the insoluble complexing agent

is selected from the group consisting of benzotriazole, 1,6-dioxaspirol [4,4] nonane 2,7-dione, dioximes, and any combination thereof.

67. (New) The composition of claim 63, wherein the insoluble complexing agent comprises 2,4-pentanedione dioxime.

68. (New) The composition of claim 63, wherein the soluble complexing agent is selected from the group consisting of citric acid, copper-complexing catechol derivatives, copper-complexing alpha organic acids, copper-complexing hydroxamic acids, copper-complexing amino acids, copper-complexing dicarboxylic acids, and any combination thereof.

69. (New) The composition of claim 57, wherein the abrasive comprises milled alumina.

70. (New) The composition of claim 57, wherein a pH of the composition is in a range of from approximately 2.0 to approximately 5.0.